ECP/412/85

International
Marketing Information
Series

United Kingdom
CMS/ECP/412/85, October 1985

CMS

Country Market Survey

NEWARK PUBLIC LIBRARY
MAR 2 0 '86
U. S. DOCUMENTS DIVISION
DEPOSITORY 378

Electronic Components Production/Test Equipment

United Kingdom

U.S. DEPARTMENT OF COMMERCE
International Trade Administration

READEX
FICHE

C 61.9:

After an extended period of stagnation, the United Kingdom's electronic components production/test equipment market is poised for expected recovery (see table 1 and figure 1). Declining componentry demand and reluctance to invest in reequipment and expansion on the part of recession-hit companies characterized several years when only their diversification kept many local manufacturers in business.

Sales of components production/test equipment depend directly on the activities of component manufacturers and of their customers in the consumer electronics and electronic equipment sectors. All three are dominated by multinational giants, which are setting a buoyant pace. Consumer electronics are rising, with sales of some commodities up by 20 percent; capital equipment makers are progressing in telecommunication systems, industrial process controls, transportation systems, and medical engineering. Componentry is flourishing in many sectors, including semiconductors, passive and hybrid microcircuits, color tubes, professional valves and tubes, printed circuits, capacitors, and resistors.

Industrial planners recognize that increased research and development and upgraded designs are necessary to retain Britain's standing as an instrument engineering nation and exporter. Even so, the domestic industry is not expected to keep pace with growing demand, creating favorable conditions for foreign suppliers, particularly the American firms that dominate imports because of their advanced technology.

Note: All values are given in U.S. dollars. Local currency is converted at the following exchange rates: US$1 = £0.42 (1974); £0.43 (1977); £0.45 (1980); £0.67 (1983); £0.77 (1984); and £0.91 (1987).

Source: "Market Research Profile on the Electronic Components Production and Test Equipment Market in the United Kingdom," prepared by Tactical Marketing Limited, 73 New Bond Street, London W1Y 9DB, April 1985, under contract to International Trade Administration, U.S. and Foreign Commercial Service (see Additional Information box).

Purchasers

Components manufacturers, representing a healthy, growing sector of the British economy with sales projected to climb from $2.7 billion in 1983 to $3.4 billion in 1987, are the major end users of components production/test equipment (see table 2 and Figure 2). The **semiconductor sector** shows heavy dependence on U.S. input from companies such as AVX, General Instrument, Hughes, ITT, International Rectifier, Motorola, National Semiconductor, Semtech, Siliconix, and Texas Instruments. Purely domestic makers, including Plessey, Keyswitch Varley, Ferranti, Marconi Electronic Devices, and AB Electronic Compo-

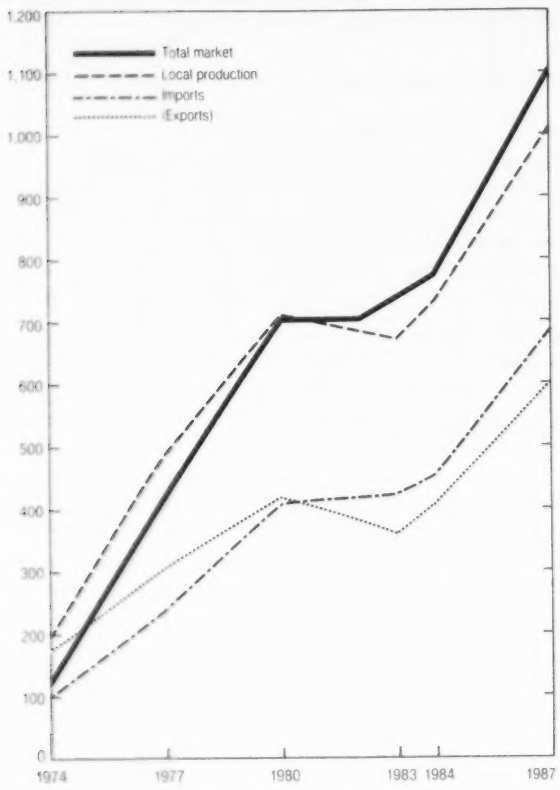
Table 1.—United Kingdom: The market for electronic components production/test equipment, 1974-87

(in millions of U.S. dollars)

	1974	1977	1980	1983	1984	Projected 1987
Wafer fabrication equipment						
Production	2	7	53	92	114	165
Imports	5	18	55	60	62	134
Exports (less)	—	2	31	42	52	88
Total	7	23	77	110	124	211
Semiconductor assembly equipment						
Production	9	94	200	198	183	253
Imports	7	85	86	97	134	181
Exports (less)	2	76	128	104	108	154
Total	14	103	158	191	209	280
Passive and other components production equipment						
Production	113	198	264	200	231	275
Imports	49	62	77	128	117	198
Exports (less)	108	103	123	107	139	187
Total	54	157	218	221	209	286
Component test equipment						
Production	71	189	194	180	203	325
Imports	40	76	191	137	139	181
Exports (less)	63	127	136	103	109	176
Total	48	138	249	214	233	330
Total market						
Production	195	488	711	671	732	1,018
Imports	101	242	409	422	452	695
Exports (less)	174	308	418	356	408	605
Total	122	422	702	737	776	1,108

Source: "Market Research Profile on the Electronic Components Production and Test Equipment Market in the United Kingdom," prepared under contract for the International Trade Administration, U.S. and Foreign Commercial Service (see Additional Information box).

Figure 1
United Kingdom: The market for electronic components production/test equipment, 1974-87
(in millions of U.S. dollars)



nents, enjoy considerable export sales, but their design expertise lies in the more limited areas of small-volume customized semiconductors, IC's, discrete components, and electronic assemblies for medium-volume usage.

Test equipment is of keen interest to semiconductor manufacturers, since the devices must be tested both at the production stage and again when assembled into configured equipment (see tables 3a, 3b, and 3c). American-made test equipment is purchased by all the semiconductor makers, even those like Plessey, Ferranti, and Marconi that design their own specialized ATE devices and systems.

Four of the major semiconductor manufacturers planning large new U.K. investments deserve special attention. *National Semiconductor*, one of the leading U.S. component makers, plans a £100 million addition at its Greenock plant to house one of western Europe's most advanced microchip production lines. This facility, projected to create 1,000 jobs during 1985-89, will be one of the first in the world to make 6" diameter silicon wafers on a large scale. Current production from National Semiconductor includes diodes, Gunn-effect diodes, photosensitive diodes, Zener diodes, GaAs devices, strain gauges, thyristors, and a wide range of transistors.

Texas Instruments is projecting an $11 million expansion of its Plymouth assembly plant to more than double the output of its linear integrated circuits and telecommunications IC's. Assembly of all op-amps, bifets, and interface circuits is being transferred from Oporto in Portugal to Plymouth. The company is also considering building its first wafer fabrication plant in the United Kingdom at Bedford. Texas Instruments now produces matched diodes (pairs and quads), GaAs devices, and thyristors.

Plessey Semiconductors, a domestic firm specializing in semi-custom and full-custom semiconductors for specific applications, plans a $55 million microchip plant at Plymouth, part of a $92 million program for microchip capital expenditure over the next 5 years, including a $34 million investment in research and development. Anticipated production includes integrated circuits for use in telecommunications, direct satellite broadcasts, and cellular radios.

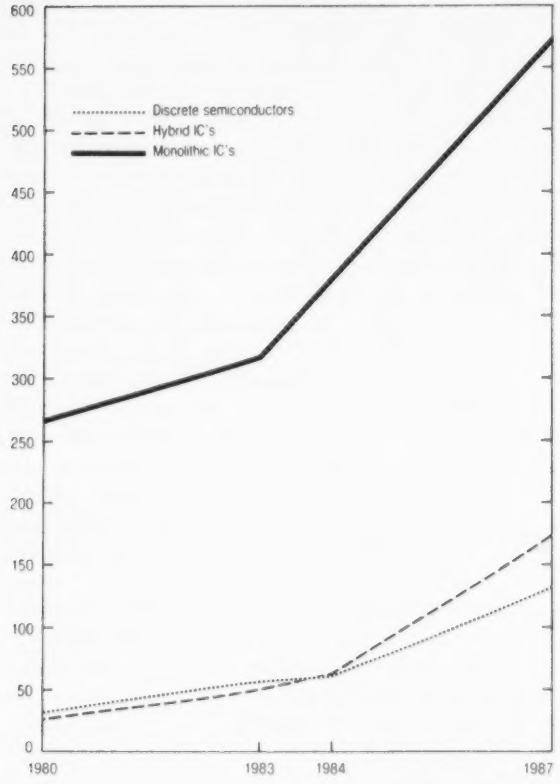
NEC Corporation, the Japanese electronics group, foresees expenditures of $55 million to establish a microchip manufacturing facility at Livingston. NEC already assembles integrated circuits at Livingston and hopes to increase its share of the European market from 4-5 percent to 10 percent. When running at full capacity in 1987, the plant is expected to be the world's largest manufacturer of VLSI parts.

Table 2.—United Kingdom: Economic indicators of major end users, 1983

	Employees		Factories		Production		Investment			
	Domestic	Offshore	Domestic	Offshore	All Comp.	Semicdr.	Capital	Prod./test equip.	R & D Expenditure	Types of components produced
							(in millions of U.S. dollars)			
Mullard	NA	—	2	—	93	49	NA	NA	NA	Diodes, transistors, GaAs devices, thyristors
Ferranti	360	—	3	—	75	75	8	1	11	Diodes, Zener diodes, GaAs devices, transistors
Inmos	300	260	1	1	—	57	40	15	30	Diodes, Zener diodes, transistors
Plessey Semiconductors	280	—	3	—	51	51	55	21	6	Diodes, GaAs devices, transistors, Zener diodes
NatSemi United Kingdom	1,650	—	2	—	NA	NA	110	18	NA	Diodes, GaAs devices, thyristors, transistors
Others	2,969	—	—	—	—	238	—	—	23	—

Source: International Trade Administration research report.

Figure 2
United Kingdom: Local semiconductor production, 1980-87
(in millions of U.S. dollars)



Important manufacturers of valves and tubes, including Thorn-EMI, Varian, STC, Rank, Mullard, M-O Valve, GEC, Ferranti, and Centronic, are making considerable efforts to conform to new, higher quality parameters for reliability in performance, creating excellent sales opportunities for suppliers of both test and production equipment. In color picture tubes, major producers like Mullard and Thorn-EMI need automatic test equipment as they move into production of a new generation of tubes.

Locally owned companies reign supreme in the **passive components** market and are strong producers of printed circuits and capacitors. Home market demand is climbing for conventional PC's, plated-through-hole circuits, multilayer PC's, and flexible PC's. The nearly 200 PCB firms need production equipment to increase productivity and test equipment to maintain quality. Capacitor manufacturers, producing multilayer ceramics and tantalum electrolytics for the export market, need surface mounting equipment and cost-effective production systems. Quality control and testing devices will also find a ready audience.

Computer and peripherals manufacturers abound, including 38 mainframe suppliers, 320 microcomputer producers, and 160 minicomputer makers, as well as over 400 peripheral hardware suppliers. Most are sales and service operations owned by generally American foreign manufacturers, but all are involved in some form of assembly, reconfiguration of systems, repair and maintenance, and interfacing. They need testing equipment as well as production items in varying degrees.

Table 3a.—United Kingdom: Production of semiconductors, 1980-87

(in millions of U.S. dollars)

	1980	1983	1984	Projected 1987
Discrete semiconductors	31	56	60	133
Optoelectronic devices	29	47	52	144
Bipolar IC's	187	70	86	102
Hybrid IC's	26	50	62	175
MOS logic	57	143	172	226
MOS memory	22	104	121	247
Totals	352	470	553	1,027

Source: International Trade Administration research report.

Table 3b.—United Kingdom: Semiconductor manufacturing profile, 1983-84

(in percentages)

	1983	1984
Wafer size		
100 mm	11	10
125 mm	15	17
150 mm	59	53
>150 mm	15	20
	100	100
Level of integration		
Discrete	18	15
ICs	26	28
SSI/MSI (under 100 gates/chip)	22	16
LSI (100-998 gates/chip)	20	26
VLSI (1,000 or same gates/chip)	14	15
	100	100
Process technology		
Bipolar	44	35
NMOS	34	37
CMOS	22	28
	100	100
Packaged technology		
Dual in-line packaging (DIP)	50	50
Plastic	35	30
Ceramic	15	20
Other	100	100
Die attachment	38	45
Eutectic bonding	41	40
Epoxy	21	15
Other	100	100
Bonding wire	85	80
Aluminum	5	10
Gold	10	10
Other	100	100
Number of pins/grid (PGA)	48	40
Below 20	40	50
20-40	12	10
Over 40	100	100

Source: International Trade Administration research report.

Table 3c.—United Kingdom: Semiconductor testing profile, 1983

Production stage	Acceptable yield %
Microlithography	98
Etch and strip	96
Ion implantation/diffusion	95
Deposition	95
Assembly	98

Source: International Trade Administration research report.

British firms also manufacture a wide variety of **other electronic capital equipment** including office machines such as copiers and word processors; consumer electronic equipment such as hi-fi, television, and kitchen and washroom apparatus; industrial equipment such as process controls; transportation and communications capital electronic equipment; and banking and other on-line terminal equipment. Makers of all these types of hardware require both production and test equipment, the latter for aftersale use as well as for production.

Components distributors comprise a thriving sector that services the entire manufacturing industry. Large firms use the distributors as second sources and to fill componentry shortages caused by long delivery dates. Distributors carry a wide range of components, and many include production/test equipment in their inventory. (A comprehensive list of such distributors and their products is included in the research).

Competitive Assessment

Approximately 400 manufacturers, most of them British, are active in the electronic components production/test equipment market, with no single supplier taking more than 5 percent of turnover. The United Kingdom offers one of the least hostile markets to foreign input, with imports accounting for 58 percent of 1984 purchases. Dominance of multinationals in the components manufacturing sector accounts for much of this easy entry into the U.K. market (see table 4).

Domestic suppliers.—With nearly 300 well-entrenched local suppliers, the United Kingdom has a

Table 4.—United Kingdom: Imports of electronic components production/test equipment, 1980-87

(in millions of U.S. dollars)

	1980	1983	1984	Projected 1987
Wafer fabrication equipment				
United States	20	21	25	46
Germany	9	9	9	
Switzerland	4	8	9	
Japan	4	4	6	
France	7	4	6	
Others	11	14	6	
Total	55	60	61	134
Semiconductor assembly equipment				
United States	33	33	44	64
Japan	7	8	16	
Germany	7	8	12	
Switzerland	9	6	10	
France	4	4	9	
Others	26	38	43	
Total	86	97	134	181
Automatic test equipment				
United States	11	15	17	24
Germany	9	8	8	
Japan	4	6	6	
France	4	4	6	
Switzerland	7	4	5	
Others	9	4	3	
Total	44	41	45	77
Logic analyzers				
United States	9	9	9	12
Germany	2	3	5	
Switzerland	2	4	5	
Japan	2	3	4	
France	—	2	3	
Others	4	4	3	
Total	19	25	29	36
Environmental test equipment				
United States	4	6	6	8
Germany	2	3	4	
Japan	—	2	3	
Switzerland	2	2	3	
France	—	3	3	
Others	4	6	3	
Total	12	22	22	25
Microprocessor development systems				
United States	15	14	13	15
Japan	7	7	8	
Germany	7	12	6	
Switzerland	2	3	4	
France	—	3	4	
Others	9	—	3	
Total	40	39	38	44
Other component test equipment				
United States	9	9	9	14
Germany	7	7	6	
Japan	7	6	5	
Switzerland	2	3	4	
France	—	2	3	
Others	—	3	5	
Total	25	30	32	46
Passive and other components test equipment				
United States	18	21	17	46
Germany	29	18	18	
France	13	15	9	
Switzerland	2	12	4	
Japan	4	7	3	
Others	62	36	40	
Total	128	109	91	151
Total imports				
United States	119	127	140	229
Germany	70	67	68	
Japan	35	43	51	
Switzerland	31	42	44	
France	29	37	43	
Others	125	106	106	
Total	409	422	452	695

Source: International Trade Administration research report.

thriving domestic source of production/test equipment covering a broad range (see table 5). Local makers include firms with worldwide reputations such as Cambridge Instruments, Baird & Tatlock, Chandon Scientific, and Kent Instruments, but the industry is essentially made up of small companies or small divisions of larger firms. In addition to the scores of long-established manufacturers of traditional equipment (see list of Leading Suppliers), approximately 80 new firms have emerged to produce digital computer-driven instrumentation. Relations between the local production/test equipment makers and their component-manufacturing and computer-assembling customers remain marked by a willingness to learn from each other.

Locally-made goods are often supported on "buy British" grounds, even though they may not be in the forefront of sophisticated technology and design. The industry is now placing higher priority on good design, however, as it fights to keep its share of both home and export markets. About 87 percent of research expenditures come from the manufacturers themselves, with the remainder generated by 40 research associations, independent laboratories, universities, and government research establishments.

Domestic manufacturers are particularly strong in digital metering, and dramatic growth is predicted in wafer production equipment, automated assembly systems, and testing devices. Local producers have lagged behind foreign makers in the semiconductor test system market but do well in production equipment for passive components.

More than half of all local production is sent abroad, mostly to EEC countries, but export activity varies greatly according to commodity (see table 6). Components testing devices represent the greatest export success.

U.S. suppliers.—U.S. sources are relying on their technological superiority to strengthen their share of imports in 1987, despite increased pressure from the Japanese and EEC countries. In addition, the major U.S. vendors benefit from a good electronics reputation, an image of strength and reliability, effective marketing, and the influence of U.S. multinational end users. Since rapid and sustained growth is expected in the semiconductor market, equipment for semiconductor production and testing presents the best marketing opportunities (see Best Sales Prospects). Makers such as Fairchild, Teradyne, and GenRad have dominated the semiconductor test system market.

Other suppliers.—German firms are banking on their reputation for timely deliveries of reliable, ruggedly constructed equipment to increase their share of imports between 1984 and 1987. More than 50 companies provide production and assembly apparatus, and other manufacturers ship a variety of test equipment.

Persistent marketing efforts and careful attention to customer requirements should give **Japanese** suppliers an expanded portion of the import market by 1990. So far, Japanese have limited themselves mostly to shipments of test equipment and passive components production equipment.

The **Swiss,** even though known for reliable, long-lasting precision equipment, expect some erosion in their share of imports. Trade sources see these manufacturers gradually pricing themselves downscale.

Suppliers in both **France** and **Italy** expect to improve their market shares significantly. The French are in a favored position as EEC style leaders and electronic innovators, and Italians rely on their moderate prices and selective products strength.

Reexports of electronic components are strong because of the American, Dutch, and other multinational producers that use U.K. plants as feeders for Europe and elsewhere. Reexports of production/test equipment are not projected to become significant, however, unless the large Japanese conglomerates decide to operate in the market with a total range of electronic componentry, test and production equipment, and capital equipment.

Table 5.—United Kingdom: Major domestic manufacturers of electronic components production/test equipment, 1983

(in millions of U.S. dollars)

	Employees (in-country)	Foreign affiliation	Production		Exports	Capital investment
			Semiconductor prod./test equip.	All		
Pye-Unicam Ltd	1,100	Philips (Netherlands)	5.4	17.1	5.1	1.8
Marconi Instruments Ltd	1,900	—	2.3	16.9	9.3	1.7
Tektronix (UK) Ltd	700	Tektronix (United States)	4.3	12.1	1.7	0.9
Perkin-Elmer Ltd	800	Perkin-Elmer (United States)	3.9	14.4	2.0	1.3
Ferranti Instrumentation Ltd	557	—	4.2	13.8	6.9	1.5

Source: International Trade Administration research report.

Business Practices

End users purchase about 63 percent of their production/test equipment directly from U.K. manufacturers or from overseas manufacturers' importers; the rest comes from the many wholesale merchants or distributors. New-to-the-market U.S. suppliers should have no difficulty locating conscientious, experienced, and effective distributors. Components distributors are often able to penetrate the electronic manufacturing industry better than even the most effective direct sales importer. While filling a manufacturer's immediate component requirements, they are well placed to perceive other needs for new and replacement production systems and test instrumentation.

Many foreign components production/test equipment makers maintain sales offices in the United Kingdom, including Bruel & Kjaer, Contraves Industrial Products, DuPont Analytical Instruments, Fischer Instrumentation, Fluke (GB), GenRad, Gould Instruments, Hartmann & Braun, Hewlett-Packard, Keithley Instruments, Nicolet Instruments, Rohde & Schwarz, Sfena, Siemens, and Zehntel. (The research contains information on trade journals, associations, and product exhibitions).

British buyers choose equipment mostly for its suitability, rugged design, advanced technology, and reliability. They are accustomed to well-built devices from their local suppliers and expect purchases to have a life cycle of 5-7 years, often physically outlasting their technological life. Financing terms and price usually have least importance in their purchasing decisions.

Table 6.—United Kingdom: Exports of electronic components production/test equipment, 1980-87

(in millions of U.S. dollars)

	1980	1983	1984	Projected 1987
Wafer fabrication equipment				
United States	4	4	6	13
Italy	7	9	12	
Germany	4	5	6	
Netherlands	4	3	6	
France	2	3	4	
Others	10	18	18	
Total	31	42	52	88
Semiconductor assembly equipment				
United States	22	19	16	20
Italy	33	28	27	
Germany	29	21	22	
Netherlands	9	12	16	
France	24	18	10	
Others	11	6	17	
Total	128	104	108	154
Automatic test equipment				
United States	13	6	9	11
Italy	11	18	12	
Germany	7	11	12	
France	4	6	6	
Netherlands	2	6	4	
Others	7	4	6	
Total	44	51	49	55
Logic analyzers				
United States	4	4	5	9
Italy	15	12	12	
Germany	10	5	5	
Netherlands	2	3	5	
France	4	6	4	
Others	5	6	4	
Total	40	36	35	50
Environmental test equipment				
United States	4	3	4	6
Italy	14	10	7	
Germany	7	6	4	
France	4	3	4	
Netherlands	2	3	3	
Others	2	3	4	
Total	33	28	26	33
Microprocessor development systems				
United States	4	3	3	4
Italy	14	7	5	
Germany	4	4	5	
France	2	2	3	
Netherlands		3	1	
Others		3	8	
Total	24	22	25	33
Other components test equipment				
United States	7	6	8	13
Italy	11	7	6	
Germany	4	4	3	
France		2	3	
Netherlands		2	3	
Others	7	7	10	
Total	29	28	33	55
Passive and other components production equipment				
United States	22	7	10	13
Netherlands	7	5	16	
Italy	24	7	8	
Germany	13	6	6	
France	9	5	3	
Others	15	15	38	
Total	90	45	81	137
Total exports				
United States	81	54	61	89
Italy	128	100	89	
Germany	77	61	64	
Netherlands	26	36	53	
France	51	43	36	
Others	55	62	105	
Total	418	356	408	605

Source: International Trade Administration research report.

Table 7.—United Kingdom: Purchases of electronic components production/test equipment by end-user sector, 1980-87

(in millions of U.S. dollars)

	1980	1983	1984	Projected 1987
Merchant producers	429	451	476	679
Captive producers	216	225	238	340
Research and other	57	61	62	89
Total	702	737	776	1,108

Source: International Trade Administration research report.

Imports from the United States or Japan are subject to tariffs of up to 11.8 percent. Goods from EEC and EFTA suppliers enter the country duty-free. A value-added tax of 15 percent levied at the point of sale applies to both foreign- and domestically sourced equipment. Certificates of origin are normally required for overseas purchases.

Safety and performance regulations for components production/test equipment are not mandatory but are commercially desirable. Electrical supply is normally 220 volts AC for domestic use and 380 volts AC for industry. The metric system of weights and measures applies, although the imperial system still is seen. All product labels, product documentation, instruction manuals, point-of-sale material, and quotations should be expressed in metric terms.

Leading Suppliers

Company	Foreign affiliate or country of mfgr.	Products
Wafer fabrication equipment		
BSL	United Kingdom	Polishing machines
Lenton Thermal Designs	United Kingdom	Wafer furnaces
Loadpoint	United Kingdom	Wafer dicers
Foreign suppliers:		
AFS Mikro-electronik	Germany	Wafer saws
ASM	Germany	Wafer saws
BPI	Germany	Wafer carriers
Berney SA	Switzerland	Wafer saws
Brooks-Orbitran	United States	Wafer handling robots
Diamant	Germany	Wafer saws
General Signal Lindberg	United States	Furnaces
Gustav Wirz AG	Switzerland	Wafer preparation equipment
Heraeus	Germany	Vacuum ovens
Intellemetrics	United States	Film deposition control systems
Kulicka & Soffa AG	Switzerland	Wafer preparation equipment
Lam Research	United States	In-line etchers
Leitz	Germany	Wafer production equipment
Lufran	United States	Photoresist monitors
Macrotron	Germany	Wafer preparation equipment
Rotec Corporation	United States	Wafer saws
Semas AG	Switzerland	Wafer preparation equipment
Syntel GmbH	Germany	Wafer production equipment
Teledyne Tac	United States	Wafer probers
Semiconductor assembly equipment		
Domestic suppliers:		
ET Electrotech	United Kingdom	Magnetron sputterers Plasma strippers
MTL Microtesting	United Kingdom	Semiconductor manufacturing equipment
Metritherm	United Kingdom	U/S wire bonders
Plasma Technology	United Kingdom	Plasma etchers
Vanwell Data systems	United Kingdom	Semiconductor manufacturing equipment
Foreign suppliers:		
3X GmbH	Germany	Laser trimmers
ASM	Germany	Film deposition equipment
ATV Technologie	Germany	Thick-film furnaces
Advanced Crystal Sciences	United States	Film deposition equipment
Airco Temescal BV Sciences	Netherlands	Film deposition equipment
BTU Bruce	United States/ United Kingdom	Thick-film furnaces
Balzer	Finland	Thin-film equipment
Bio-Rad	Germany	Deposition equipment
CIT-Alcatel	France	Thin-film equipment
CJT Vacuum	Germany	Deposition equipment
Cadillac Plastic GmbH	United States	Substrates
Cladan Inc	United States	Thick-film furnaces
De Haart Inc	United States	Thick-film furnaces
Delvotec	Switzerland	Automatic bonders
Dickfilm System AG	Switzerland	Hybrid manipulators
Easton Semiconductor Equipment	United States	Semiconductor manufacturing equipment
Esec SA	Switzerland	Automatic bonders
Gelman	United States	Particle counters
Gretag AG	Switzerland	Laser trimmers
Helmut Seier	Germany	Thick-film furnaces
Hoechst	Germany	Plasma etchers
Hunt Chemical BV	Netherlands	Plasma etchers
Intertherm GmbH	Germany	Plasma etchers
Karl Suss	Germany	Film deposition equipment
Ke-Tex	Germany	Substrates
Kohlmann	France	Plasma etchers
Kulicka & Soffa AG	Switzerland	Wire bonders
Laser Optromic GmbH	Germany	Laser trimmers
Leybold-Heraeus	Germany	Thin-film equipment
Linn Elektronik	Germany	Thick-film furnaces
Macrotron	Germany	Film deposition equipment
Nacom	United States	Pressure regulators
Orthodyne Inc	United States	Automatic bonders
Perkin-Elmer	United States	Thin-film equipment
Piezo-Ceram	France	Thin-film equipment
Research Inc	United States	Epitaxial reactors
Semas AG	Germany	Coring plants
Sillner Maschinenbau	Germany	Laser trimmers
Teradyne GmbH	United States	Laser trimmers
Vacotec SA	Switzerland	Deposition equipment
Varian GmbH	Switzerland	Semiconductor assembly equipment

Leading Suppliers—continued

Company	Foreign affiliate or country of mfgr.	Products
Passive and other components production equipment		
Cooper Group	United Kingdom	IC pullers
Dage Precima	United Kingdom	Assembly centers
Ferranti Infographics	United Kingdom	Image generators
Race Electronics	United Kingdom	Assembly stations
AFS Mikro-elektronic	Germany	Microcomponent auto-inserters
Advanced Controls	United States	PCB fabricators
Altoflex	France	Interconnecting equipment
Arcotronicsa SpA	Italy	Assembly centers
Automelec SA	Switzerland	Assembly centers
Autosplice	United States	Microcomponent auto-inserters
BEST-Ventil	Germany	Connecting elements
Bruckner	Germany	Crimpers
Chad Industries	United States	Robotic systems
Comil	France	Assembly stations
Covatec SA	Switzerland	Assembly equipment
Covatec SA	Switzerland	Fine welders
Du Pont	Belgium/ United States	Microcomponent auto-inserter
Einhart-Dyna	Germany	Microcomponent auto-inserters
Excellon Europe GmbH	United States	Microcomponent auto-inserters
Farco	Switzerland	Assembly centers
Fohrenbach	Germany	Assembly centers
Fuji Machine Corp'n	Japan	Microcomponent auto-inserters
Geissler	Germany	Assembly station
Grassmann	Germany	Interconnecting equipment
Gravel	Germany	Assembly centers
Gustav Wirz	Germany	Microcomponent auto-inserters
H.P. Beeb	Germany	Inserters
Intercord	Switzerland	Assembly equipment
Iteco	Italy	Assembly centers
Knurr	Germany	Connecting elements
Kontakt-Systeme AG	Switzerland	Assembly centers
Lasag AG	Switzerland	Fine welders
Lemmer	Germany	Inserters
Messma	Germany	Assembly centers
Meto-Fer AG	Switzerland	Assembly centers
Microtronic	Germany	Microcomponent auto-inserters
Molex GmbH	Germany	Pin inserters
NIMOT	Germany	Assembly centers
National Panasonic	Japan	Microcomponent auto-inserters
Nitto Kogyo	Japan	Microcomponent auto-inserters
Oswald Boll	Germany	Assembly stations
Peter Jordan	Germany	Inserters
Pico	Germany	IC handling equipment
Polytronik	Germany	Assembly stations
Proselec SA	Switzerland	Assembly stations
Pye Unicam (Philips)	Netherlands	Microcomponent auto-inserters
Royonic GmbH	Germany	Inserters
Schlatter AG	Switzerland	Interconnecting equipment
Schlup	Switzerland	Assembly centers
Seitz & Hohnerlein GmbH	Germany	Assembly centers
Sekuria GmbH	Germany	Assembly centers
Seimens AG	France	Assembly equipment
Sormel	Germany	Pin inserters
Streckfuss	United States	IC handling equipment
Systemation Inc	Germany	Assembly equipment
TEA	United States	Assembly centers
Unilab-Datamation	Switzerland	Pin inserters
Vogt AG	Switzerland	Connecting elements
Vogt AG	Germany	Assembly centers
Walter Kundler	Germany	IC inserters
Weber Werkzeug	Germany	IC pullers
Weld-equip	Sweden	Inserters
Winex AB	Switzerland	Pin inserters
Wuthrich AG	Germany	Assembly centers
Zehntel GmbH		
Component test equipment		
Domestic suppliers:		
Adcola	United Kingdom	Soldering devices
Bazelman	United Kingdom	Probes
Circuit Engineering	United Kingdom	Testing equipment
Columbia-Zehntel	United Kingdom/ Germany	Burn-in equipment
Eaton Test Systems		Circuit testers
Electrovert		Test systems
Endevco		Soldering testers
Fairchild	United Kingdom/ United States	Calibration systems
Fluke	United Kindgom/ United States	Automatic linear test systems
Forwessun		Multimeters
GenRad	United Kingdom/ United States	In-circuit testers
Hewlett-Packard	United Kingdom/ United States	In-circuit testers
ITT	United Kingdom/ United States	Test systems
Keithley Instruments	United Kingdom/ United States	Oscilloscopes
Marconi Instruments		Signal processors
Nicolet	United Kingdom/ United States	Waveform generators
Polor		ATE
Tektronix	United Kingdom/ United States	Measuring equipment
Teradyne		Board testers
Systron-Donner (Thorn)	United Kingdom	Meters
Wayne-Kerr	United Kingdom/ United States	Memory test systems
		Component test systems
		Test equipment

Leading Suppliers—continued

Company	Foreign affiliate or country of mfgr.	Products
2A Srl	Italy	Testing equipment
3X GmbH	Germany	Automatic test equipment
Altoflex	France	Monitoring equipment
Arcotronics SpA	Italy	Testing equipment
BPI	Germany	Measuring equipment
Bio Rad GmbH	Germany	Testing devices
Brabender Realtest GmbH	Germany	Test chambers
Computer Automation	United States	Functional test stations
Darragon SA	France	Testing equipment
Electronic Systems & Programming, Inc	United States	In-circuit testers
Everett/Charles	United States	In-circuit testers
Gyrex Corporation	United States	Measuring equipment
Heiden	Germany	Logic analyzers
Ingun Prufbau	Germany	Automatic test equipment
Instrumatic	Germany	Automatic test equipment
Itronic-Fuchs	Germany	Automatic test equipment
KTS Electronic GmbH	Germany	In-circuit testers
Kommer	Germany	Testing devices
Kulicka & Soffa AG	Switzerland	Testing equipment
Macrotron GmbH	Germany	Monitoring equipment
Myron	United States	Water bank controls
Pema GmbH	Germany	Testing equipment
RMS	Germany	Testing equipment
Rohde & Schwarz	Germany	Logic analyzers, monitors
Siemens AG	Germany	Testing devices
Solartron	Netherlands Antilles	Test laboratories
Syntel GmbH	Germany	Testing equipment
Telepacific	United States	Testing equipment
Temptronic Corp'n	United States	Measuring equipment
Tenney	United States	Environmental test systems
VG Instruments GmbH	Germany	Measuring equipment
W C. Heraeus GmbH	Germany	Test chambers
WEGO Messtechnik	Germany	Automatic test equipment
Weiss Technik GmbH	Germany	Test chambers
Zwick GmbH	Germany	Testing equipment

Best Sales Prospects

Category	Potential buyers	Timeframe
Wafer fabrication equipment	NatSemi/NEC/Plessey/Ferranti/Inmos/Motorola/Hughes/Harris/Fairchild/Marconi/Mullard/Merchants	1984-1990
Semiconductor assembly equipment	NatSemi/NEC/Plessey/Ferranti/Inmos/Motorola/Hughes/Harris/Fairchild/Marconi/Mullard/Merchants	1984-1990
Passive and other components production equipment	STC/Mullard/Keyswitch/Plessey/Vero/Tectronic/Vishay/Semtech/Marconi/Diodes/ITT/AB/Intel/Merchants/Computer manufacturers	1984-1987
Components test equipment	STC/Mullard/Keyswitch/Plessey/Vero/Tectronic/Vishay/Semtech/Marconi/Diodes/ITT/AB/Intel/Merchants/Computer manufacturers	1984-1990

United Kingdom: Basic Economic Indicators

Population:	56.078 million (1983)
GDP:	£318.2 million (1984)
Per capita income:	$9,660 (1982)
Inflation rate:	5.0% (1984)
Exports f.o.b.:	£70.5 billion (1984)
U.S. share:	14.4% (1984)
Imports c.i.f.:	£78.7 billion (1984)
U.S. share:	12.5% (1984)
Major trading partners:	EC, Commonwealth, Germany, United States, COCOM
Exchange rate:	£1.336 × US$1 (1984)
Fiscal year:	1 April-31 March
Current account balance:	£4,255 million (1984)
International reserves:	$21,083 million (1982)
Labor force:	27.1 million (1984)
Unemployment:	13.1% (1984)
Average hourly wage:	$6.28 (1983)

Useful Addresses

Embassies

American Embassy
Commercial Section
24/31 Grosvenor Square
London W1A 1AE
tf: 499 90 00
tx: 266777

British Embassy
3100 Massachusetts Avenue, N.W.
Washington, DC 20008
tf: 462-1340

U.S. Chamber of Commerce

American Chamber of Commerce (U.K.)
75 Brook Street
London W1Y 2EB
tf: 493-0381
tx: 8954665 (for ACC) GITS G

Technical standards

British Standards Institution (BSI)
Central Enquiries Section
2 Park Street
London W1A 2BS
tf: 626 90 00
tg: standards london w.1.
tx: 266933 bsilon g

Electronics trade associations

Association of Franchised Distributors of Electronic Components (AFDEC)
Owles Hall
Buntingford, Herts. Royston
tf: 7 12 09

(Trade Association to promote the concept of distribution in the U.K.)

Association of Manufacturers Allied to the Electrical & Electronic Industry (AMA)
8 Leicester Street
London WC2H 7BN
tf: 437 06 78

British Electrical & Allied Manufacturers Association Ltd (BEAMA)
8 Leicester Street
London WC2H 7BN
tf: 01-437-0678
tx: 263536

(Coordinating Body for Trade Associations; the national federation of trade associations serving the electrical, electronic & allied manufacturing industries in Britain)

Electronic Components Industry Federation (ECIF)
7-8 Savile Row
London W1X 1AF
tf: 437 41 27

(Trade Association)

Additional Information

The project officer responsible for Country Market Surveys on electronic components production/test equipment is:

Hayden M. Wetzel
ITA/EPS, Room H2012
U.S. Department of Commerce
Washington, DC 20230
Telephone: (202) 377-4493

Current information on marketing conditions in the United Kingdom is available from:

U.K. Desk Officer
ITA/IEP, Room H3044
U.S. Department of Commerce
Washington, DC 20230
Telephone: (202) 377-3748

Department-sponsored trade shows and other promotional vehicles for electronic components production test equipment are handled by:

Joseph Burke
ITA/TD, Room H4412
U.S. Department of Commerce
Washington, DC 20230
Telephone: (202) 377-5014

For a free copy of the newest catalog of Market Research Division reports, which lists all Country Market Surveys and selected International Market Research reports, please write to:

International Market Research Services
ITA/EPS, Room H1324
P.O. Box 14207
U.S. Department of Commerce
Washington, DC 20044
Telephone: (202) 377-2665